North Pacific Research Board Semiannual Progress Report

Project #: R0304

Title: Deep Sea Coral Distribution and Habitat in the Aleutian Archipelago

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Project Summary: This project seeks to provide the first detailed mapping of coral and sponge habitats for the Aleutian Islands, where species diversity appears to be unusually high and where incidental mortality of corals and sponges is a challenging problem in the area's fisheries that use bottom contact gear. A statistical model will be made to predict coral and sponge distribution as a function of measurable environmental characteristics, and if successful, this predictive model can be used to inform management decisions for protecting corals and sponges in areas lacking detailed mapping and dive-supported observations. Further, this work will provide estimates of the relative abundance of corals and sponges, their importance to commercially valuable fish and invertebrates, and the degree to which these living substrates have been disturbed, including disturbance by fishing gear.

Surveys of coral and sponge distribution in the central Aleutian Islands were conducted using the *Delta* submersible and the support vessel *Velero IV*. Charter of the submersible and support vessel was an in-kind contribution to the project provided by NMFS ABL. Chief scientist was Robert Stone NMFS, ABL. Also participating were Dr. Doug Woodby (ADF&G), Patrick Malecha (NMFS, ABL), Dean Courtney (NMFS, ABL) and Dr. Sandra Brooke (Oregon Institute of Marine Biology). Twenty-six submersible dives were completed in the period 28 June – 9 July in the central Aleutians. Twenty-two of these dives were distributed among 10 of 17 mapped sites (Figure 1). Three dives were primarily to collect specimens and one dive was for systems calibration. Dives in the remainder of the sites are planned for the summer 2004.

Eloise Brown joined the research group in December. Under the leadership of Bob Stone she will be collecting data from the *Delta* video transects. Ms. Brown holds a M.S. in Biological Oceanography from UAF and a B.A. in Environmental Studies from University of California at Santa Barbara. She brings experience in trawl-impact research, marine invertebrate taxonomy, underwater video analysis, scientific diving and sediment core processing. She has a strong background in underwater video analysis and will be the primary video interpreter. The area (length and width) of each transect will be determined and surficial substrate types will be delineated. Corals, fish, and selected invertebrates (e.g., crustaceans and ascidians) will be

counted on each transect. Each counted organism will be assigned a location on the transect along with measures of depth, substrate type, slope, and rugosity.

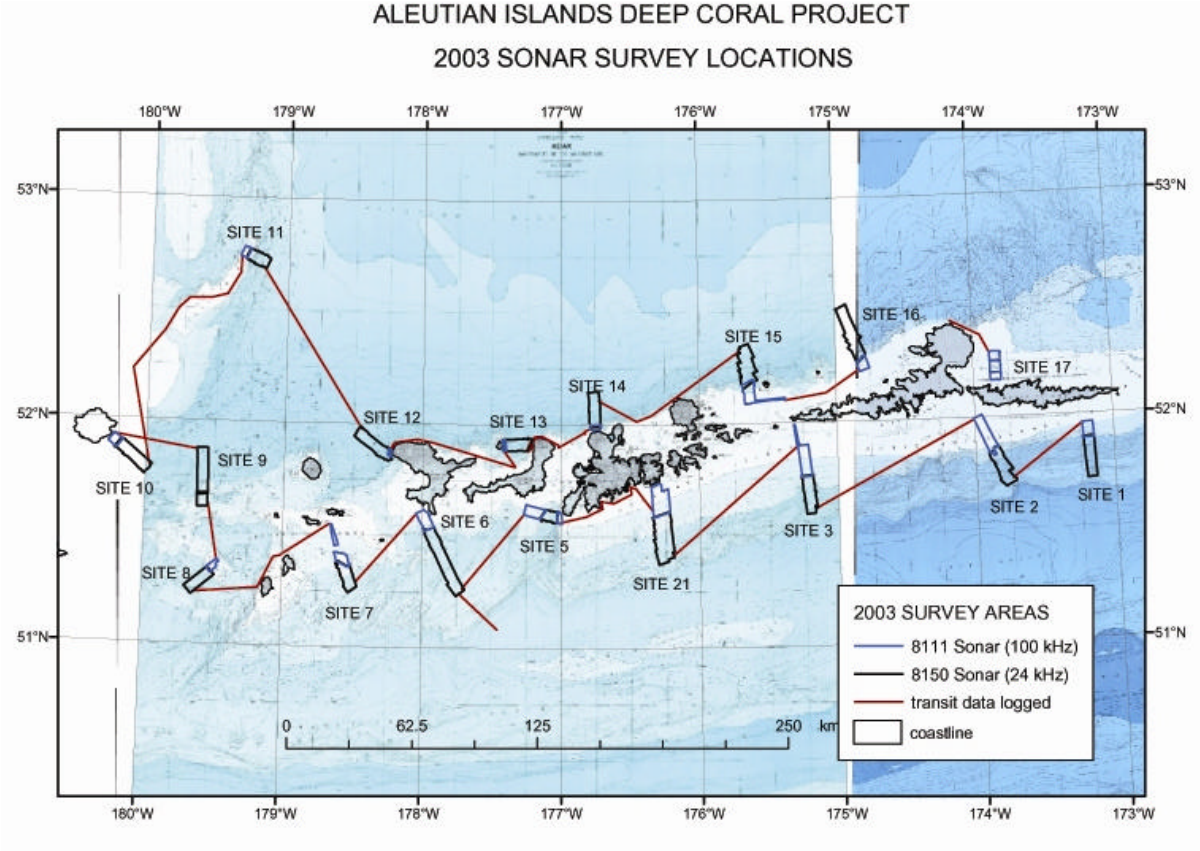

Figure 2. Location of completed mapping sites in the central Aleutian Islands.

Lena Krutikov, a graduate student from UAF's Department of Geology and Geophysics, joined the research group in September. She is working with Jennifer Reynolds and Gary Greene on the seafloor mapping data. Ms. Krutikov currently holds a B.S. in Geology from Colgate University, and brings experience in geologic mapping in Southeast Alaska, hydrological research at the Southwest Research Institute, three field seasons of airborn geophysical surveys in Antarctica, and teaching science in middle school.

In November, near final multibeam and backscatter charts and data were delivered by Thales Geosolutions (Figure 2). Jennifer Reynolds and Lena Krutikov are applying methods developed by collaborator Dr. Gary Greene to delineate seafloor habitats based on multibeam mapping. These methods have been applied to other habitat studies in Alaska and along the U.S. West Coast, and have been adopted in other countries as well. Standardization of methods and terminology will enable us to compare the Aleutian sites with habitat surveys elsewhere. Analysis of the mapping data is underway, in preparation for the *Delta* submersible and *JASON II* dive surveys in summer, 2004.

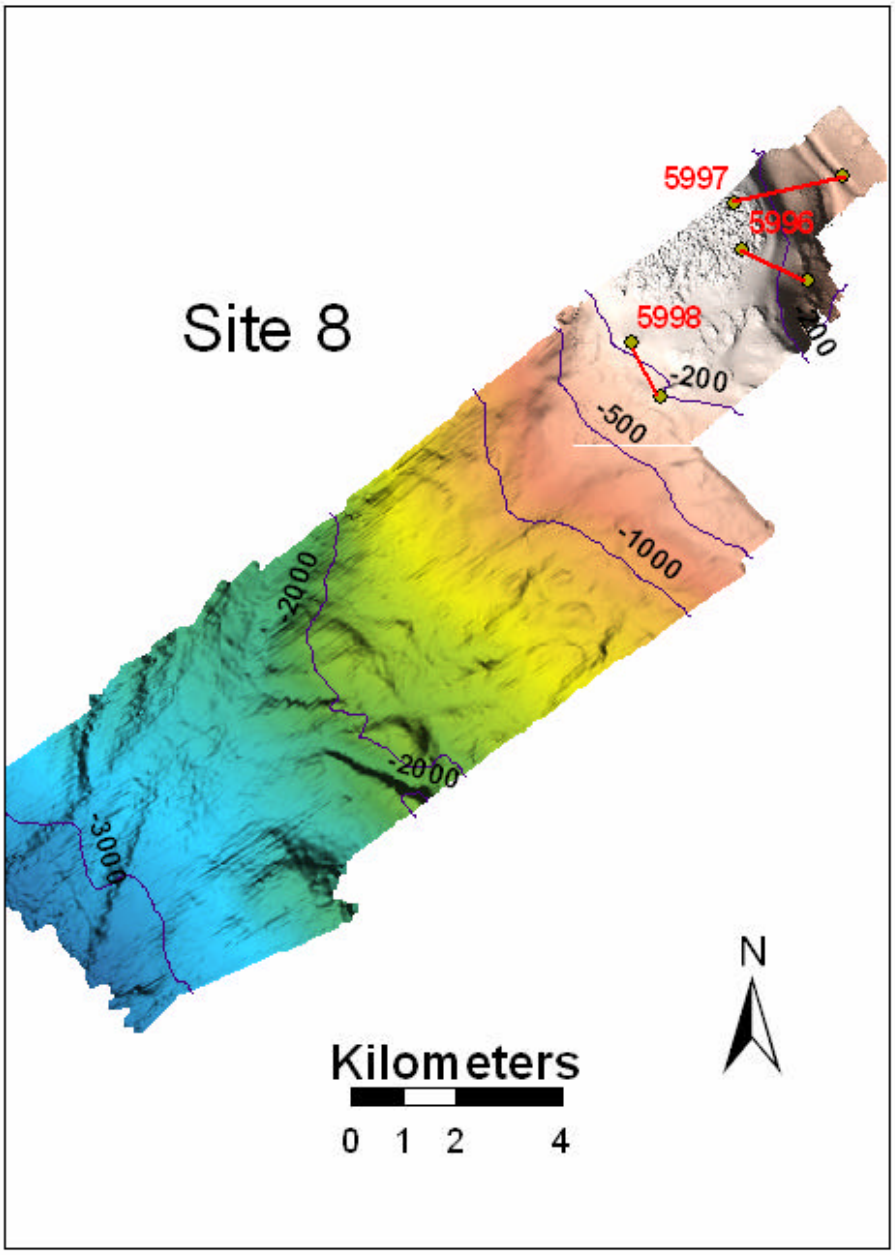

Figure 2. Multibeam bathymetric map of site 8 in the central Aleutian Islands. This is an example of the 17 such maps produced in summer 2003. Depth contours are in meters. *DSV Delta* dive transects shown in red. Dives deeper than 365 m will be conducted with the *Jason II* ROV in summer 2004.